REMARKS

Claims 1-18, 21-22, 27, 30 and 33 are pending. Claims 19, 20, 23-26, 28, 29, 31 and 32 have been cancelled. Applicants respectfully request reconsideration of the rejections set forth in the Office Action dated April 19, 2005 in view of the following remarks.

Election/Restriction

Claims 19, 20, 23-26, 28, 29, 31 and 32 have been cancelled without prejudice to prosecution in this or another patent application.

Double Patenting

Claims 1 and 15-18 were previously rejected for non-statutory double patenting over commonly owned patent No 6,343,129 B1. Applicants have provided a Terminal Disclaimer pursuant to 37 CFR § 1.321 with respect to U.S. Patent No. 6,343,129 B1, which should overcome the non-statutory double patenting rejection.

Rejections 35 U.S.C. § 103

Claims 1-3, 21-22, 27 and 33 were previously rejected under U.S.C. 103 (a) as being unpatentable over Whitehead, et al. (U.S. Patent 4,885,783).

Claims 1-6, 8-9, 13-16 were previously rejected under U.S.C. 103 (a) as being unpatentable over Micheron (U.S. patent 4,400,634) in view of Whitehead.

Claims 1-12 and 14 were previously rejected over Bobbio (U.S. patent 5, 206, 557) in view of Whitehead.

Claim 1 specifically recites: "wherein the polymer layer is arranged in a manner which causes a portion of the polymer layer to deform in response to a change in electric field that is applied via at least one of the first compliant electrode layer or the second compliant electrode layer **and** wherein a portion of the polymer layer is capable of a strain of greater than 25% between a first position of the elastomeric dielectric polymer layer with a first area and a second

position of the elastomeric dielectric polymer layer with a second area." Thus, claim 1 recites an electroactive polymer capable of a strain of greater than 25%.

Applicants respectfully traverse the rejections. The Office Action admits that the prior art does not teach an electroactive polymer capable of a strain greater than 25% (see page 4, last paragraph for Whitehead; page 6, paragraph 6 for Micheron; and page 8, paragraph 5 for Bobbio). To overcome omission by the prior art, the Office Action states that an electroactive polymer having a strain greater than 25% was known to one of skill in the art. Applicants respectfully disagree.

To reject the claims that include a polymer capable of a strain of greater than 25% in response to a change in electric field applied to the polymer, the Office Action attempts to assert a) that one of skill in the art was aware of a polymer capable of a strain of greater than 25% in response to a change in electric field applied to the polymer, and b) that a polymer listed in the Applications Description of the Invention is proof of knowledge to one of skill in the art. Applications respectfully traverse.

First, at the time the invention was made, it was not known to those of skill in the art to use the silicone rubber from Dow Corning as an electroactive polymer (see page 10 of the Office Action). If so, than per MPEP 2144.03.C, Applicants challenge the Examiner's Assertion and respectfully request the Examiner to Support the Finding with Adequate Evidence. Recall that the claims also recite "the polymer layer is arranged in a manner which causes a portion of the polymer layer to deform in response to a change in electric field that is applied via at least one of the first compliant electrode layer or the second compliant electrode layer". Thus, Applicants request the Examiner to provide proof that, at the time the invention was made, (1) "providing the rubber material or polymer material having a strain of greater than 25%" was known in the art to provide an electroactive polymer.

The Office Action also points to the Applicants Specification on page 10, which describes a commercially available silicone rubber that was used as an electroactive polymer. Applicants oppose this use of the Specification; the polymer provided by in the Specification refers to a polymer for use with the claimed invention, not the prior art. The use of high-strain elastomers as electroactive polymer for the present invention was discovered by the Applicants. The listing of an enabling polymer on page 10 of the Applicants' Specification (which describes the invention, not the prior art) is not an admission that these polymers are readily useable by the

prior art to achieve the present invention. Therefore, an obviousness assertion provided in the Office Action cannot use the Applicant's description of the invention to support an obviousness rejection.

In contrast, those of skill in the art perceive the Dow Corning Sylgard 182 (the material listed on page 10 and used by the Office Action) to be an insulator. An insulator prevents electrical response. Thus, based on common knowledge to one of skill in the art at the time the invention was made, Dow Corning Sylgard 182 would not work as an electroactive polymer, and would not be a polymer capable of a strain of greater than 25% in response to a change in electric field applied to the polymer, as the Office Action asserts. From Dow Corning's current website:
(http://www.dowcorning.com/content/etronics/etronicsencap/etronics_encap_tutorial1.asp)

> "Dow Corning Sylgard 182 Encapsulants (or pottants) are protective materials to completely embed electronic circuitry. Typically, they are used to isolate circuits from the harmful effects of moisture and other contaminants, provide electrical insulation for high voltages and also protect the circuit and interconnections from thermal and mechanical stresses. Encapsulants are typically applied in thick layers--exceeding 125 mils."

Clearly, the Dow Corning Sylgard 182 polymer is commercially known as electrical insulation. Applicants note that the claims include an electrode contacting each surface of the electroactive polymer layer. Per MPEP 2144.03.C, Applicants respectfully request the Examiner to provide proof that (2) it would have been obvious at the time the invention was made to apply electrodes to electrical insulation to obtain an electroactive polymer that is capable of a 25% strain - as asserted in the Office Action. In particular, the references all use metal electrodes, so the Examiner is additionally requested provide evidence that (3) it is obvious to add metal electrodes to electrical insulation to obtain an electroactive polymer that is capable of a 25% strain as asserted in the Office Action (particularly given that metal electrodes cannot strain more than 1-2% without failure). Moreover, actuating the Dow Corning Sylgard 182 uses high voltages, depending on the thickness of the polymer. The Applicants respectfully request the Examiner to provide proof that it would have been obvious at the time the invention was made to (4) high voltages to electrical insulation to gain electroactive performance of the polymer

insulation - particularly when the Dow Corning website itself teaches the benefits of these materials as insulators and no response to high voltages.

Thus, to remedy omissions in the claims, the Office Action creates an obviousness assertion that is not supported, and the Examiner is respectfully requested to provide such technical support if the rejection is to remain. Also, Applicants will not permit a rejection to use their discovery (elastomers as electroactive polymers) and the Applications description of the invention on page 10 to support an obviousness rejection.

In the Response to Arguments section provided in the Office Action mailed November 9, 2005, the Examiner asserts that the Dow Corning Sylgard 182 is a known material. As mentioned above, however, this material was not known as an insulator and not as an electroactive polymer layer. Thus, one of skill in the art would have not looked to use it as an electroactive polymer layer since its commercial use pointed in the opposite direction: no functionality in response to electrical input. As mentioned above, Applicants request the Examiner to support the assertion that one of skill in the art would have, at the time the invention was made, used commercially available insulation as an electroactive polymer layer. Also, the Examiner asserts that "Whitehead, Micheron and Bobbio teach a rubber material for the membrane". Applicants respectfully oppose this statement as well; the references all teach PVDF, which is not a rubber material.

Furthermore, the references all include devices that would become inoperable with strains greater than a few percent. It is respectfully submitted that an obviousness rejection based on modification of a reference must result in an operable device. See MPEP δ2143.01: "The proposed modification cannot render the prior art unsatisfactory for its intended purpose". The references all use metal plated electrodes.

Whitehead describes a material sandwiched between rigid metal plates (FIG. 2). The device is designed to produce small displacements (Col. 8, 32-44). The electrodes are rigid and non-compliant (Col. 5, 29-49).

Micheron describes a biomorph transducer with a material sandwiched between metal electrodes (see column 6, lines 45-46) and not capable of strains greater than 2-4 percent without destruction.

Table 1 of Bobbio (Col. 11) shows that the range of control of the device is on .4 micrometers or less. Bobbio notes drawings are not to scale (Col. 7, 63-64). During a movement of the device, a force is generated and the spacers elongate by only 1% or less (see Col 9, 65-10, 1).

The cited references all use solid metallic electrodes. Those skilled in the art are well aware that such solid electrodes are limited to strains less than 2-4 per cent (as taught by Micheron as well). A solid metallic electrode deflects via elastic deformation. Deformations of metal electrodes at strains greater than the elastic allowance lead to cracking of the planar metal and functional destruction of the electrode. Deflection at strain levels recited in the independent claim would not be obvious in view of Whitehead, Micheron and/or Bobbio since such deflection would destroy the electrodes used by the references. The Examiner's modification of the references would render the devices inoperable. It is respectfully submitted that an obviousness rejection based on modification of a reference must result in an operable device. See MPEP §2143.01: "The proposed modification cannot render the prior art unsatisfactory for its intended purpose". Therefore, the obviousness rejections also violate rules for the modification of a reference per the MPEP.

Thus, the obviousness rejections all include inaccurate and unsupported prior art assertions, and all violate rules for the modification of a reference. For at least these reasons, independent claim 1 is not obvious in view of Whitehead, Micheron and Bobbio, or any combination of these references.

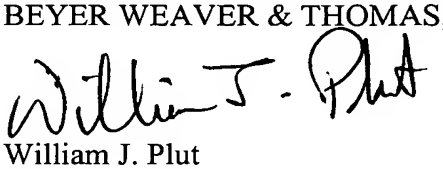
Claims 2-18, 21-22, 27, 30 and 33 each depend either directly from independent claim 1 and are therefore respectfully submitted to be patentable over the art of record for at least the reasons set forth above with respect to the independent claims. In addition, the dependent claims recite additional elements which when taken in the context of the claimed invention further patentably distinguish the art of record.

Withdrawal of the rejections under 35 USC 103(a) for are therefore respectfully requested.

Applicants believe that all pending claims are allowable and respectfully requests Notice of Allowance from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,

BEYER WEAVER & THOMAS, LLP



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